

1989 Fishery Management Plan for
Norton Sound Section
Red King Crab Fishery
(Summer Fishery Only)

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1989 FISHERIES MANAGEMENT PLAN FOR NORTON SOUND SECTION RED KING CRAB FISHERY

INTRODUCTION

The Norton Sound Section consists of all waters in statistical area Q that are north of the latitude of Cape Romanzof, east of 168° west longitude, and south of the latitude of Cape Prince of Wales (Figures 1 and 2). A large vessel summer commercial fishery has existed in this section since 1977. Limited local sales of king crab taken during the winter by Nome fishermen have also occurred for a number of years. Subsistence fishing for king crab through the ice occurs throughout the section during the winter.

STATUS OF STOCKS/RESEARCH

The Norton Sound king crab population in 1976 was largely composed of recruit and prerecruit crab. Crab abundance reached its peak in 1978 when 11 million pounds of legal male crab were estimated. Norton Sound king crab stock monitoring has included 5 trawl surveys and 4 pot assessment surveys from 1976-1988, and 7 winter studies from 1982-1987 and 1989. The results of the National Marine Fisheries Survey trawl and Alaska Department of Fish and Game pot assessment surveys are presented in Table 1. The most recent population assessment work occurred during the late summer of 1988, after the summer commercial fishery, when a trawl survey was conducted by NMFS.

From 1979 to 1982, the population experienced very low recruitment and the fishery was almost entirely supported by older postrecruit crab. This is apparent from the average weight of individual crab captured in the commercial catch, which increased from 2.7 to 3.7 pounds/crab (Table 2). As a result of fishing and natural mortality, the abundance of legal crab dropped to an estimated 1.3 million pounds in 1982.

Increased abundance of sublegal crab in both the NMFS and ADF&G 1985 research surveys indicated that improved recruitment had resulted in a moderate increase in the abundance of legal crab. A preseason population estimate of 3 million pounds was made for the 1985 season based on catch per unit effort during the ADF&G pot survey. Further analysis of the survey data placed the legal male population at 2.4 million pounds. Based on the information collected in 1985 and the apparent stable level of recruitment, the 1987 preseason harvest was set at 400,000 pounds. Unfortunately midway through the 1987 season it became apparent that recruitment levels had declined from the previous 5 year average (1982-1986) of 47% to 23%. The season was closed when

327,000 pounds had been caught. The average weight had increased to 3.2 pounds per individual crab from an average of 2.9.

Prior to the 1988 summer fishery, a conservative quota of 200,000 pounds of legal male crab was set for the Norton Sound Section. This reduced quota was based on data collected during the 1985 pot survey (ADF&G) and trawl survey (NMFS), which indicated a slight decline in prerecruit levels of crab recruiting into the 1987 and 1988 fisheries. The level of recruitment observed during the 1987 commercial fishery also indicated a decline in recruitment for the 1988 season. With no current data available on the structure of the 1988 population, a very conservative quota was justified. The quota was derived by implementing the Board of Fisheries management strategy which allows a summer fishery exploitation rate of 1/2 the normal rate, in order to protect the winter fisheries. Evidence of lowered recruitment levels in 1987 also reduced the exploitation rate for the 1988 season. The 1988 summer commercial fishery harvest was 236,688 pounds.

The Nome area staff has conducted a winter sampling program since 1982. Comparisons of size composition between the winter catches and the summer commercial samples show similar recruitment trends. However, during the late winter and early spring months of 1988, no crab were captured by ADF&G since all gear was lost during fishing due to unstable ice conditions. The department staff plans to continue this research as an index of recruitment as funding and ice conditions allow.

STATUS OF FISHERY

Commercial catches made during the summer fishery have ranged from 2.9 million pounds in 1979 to 0.2 million pounds in 1982. Annual commercial catch data for this fishery are presented in Table 2. Deadloss was a major problem during 1977-79 but was largely eliminated after 1980 because crab were processed one or two days after being captured. Another factor reducing deadloss was that fishing and processing vessels have avoided inshore waters, which have a low surface salinity that crab cannot tolerate.

A winter commercial fishery also occurs from November 15 through May 15 when crab are taken through the ice. A total of 25,000 pounds was sold during the winter of 1978. During the past ten winters, less than 5,000 pounds has been sold each year due to poor weather, unstable ice conditions, a reported absence of crab from the nearshore area, and limited marketing conditions. During 1988, 425 crab were sold by 10 local fishermen. Again, unstable ice conditions severely hampered fishing effort near Nome during the winter fishery.

Red king crab are utilized by Norton Sound residents for both recreational and subsistence purposes with fishing occurring in the winter through holes or cracks in the ice. The average catch per family in 1978 was about 70 crab with the average dropping to about 15 crab per family during the next four winters. Catches averaged 123 crab per family during the winter of 1983, 78 in 1984, 63 in 1985, 66 in 1986, and 59 in 1987, the catches from 1983-1987 represent a large increase over the previous five winters. In 1988 the winter subsistence harvest from the Nome area was 2,724 king crab. Seventy-one families received fishing permits. Of these 71 permits, fifty-eight were returned, with only 40 having been fished. Again, low effort levels were due to very unstable ice conditions for most of the winter. The average catch per fisher in 1988 was 68 crabs, however, many subsistence fishers also reported heavy gear losses due to moving ice. Table 3 summarizes winter commercial and subsistence red king crab fishery data.

OUTLOOK FOR 1989

A conservative quota of 200,000 pounds has been set for the Norton Sound Section during the 1989 season. The red king crab population is estimated to be less than 1/3 of the historic population. The population level has remained stable since 1985 with no apparent improvement while exploitation levels have been maintained near 15%. A harvest 200,000 pounds equates to roughly a 10% exploitation level. It is hoped that this rate of exploitation will allow the crab population to gradually recover and stabilize at a higher level.

With the small quota in effect, fishermen should expect the season closure to be announced with as little as 24 hours notice. The Department will place observers onboard vessels to verify catch per pot figures and to record the size distribution of the catch. An inseason projection of how soon the allowed harvest might be taken will be made, and a closure date will be announced giving as much notice as possible. Fishermen are required to have all pots unbaited with doors secured fully open at the time of the closure, regardless of how many pots they are fishing.

Fishermen are advised that each vessel is required to report (deliver a fish ticket) their catch within 24 hours of the final delivery of their catch within Norton Sound. If the vessel travels outside the Section to deliver their catch they must advise the Nome Fish and Game office and agree to a reporting time and method prior to departure from the section.

IMPORTANT REGULATIONS

Harvest Strategy 5AAC 34.915 states "the department shall manage the Norton Sound Section summer season king crab fishery for a harvest of one-half of the exploitation rate common in other Bering Sea commercial king crab fisheries."

Fishing Season (5AAC 34.910 (d) (1)):

The commercial king crab season in the Norton Sound Section of the Northern District occurs from 12:00 noon August 1 through 12:00 noon September 3 or until the optimum yield (OY) is taken. King crab pots may not be set until 12:00 noon August 1 and the vessel has received a tank inspection.

Tank Inspections (5AAC 34.940), (5AAC 34.950 (a) (b) (c) (d)), (5AAC 34.070) :

Vessels planning to fish in the Northern District must have their holds inspected before fishing. Vessels that plan to begin fishing in the Norton Sound Section must receive a tank inspection from the Nome ADF&G office. Inspections will begin at 12:00 noon July 31. If poor weather prevents department personnel from boarding vessels, tank inspection requirements will not be waived. Tank inspections will be given when weather subsides.

Permits (16.05.480 (a)):

A king crab fishing permit for the Bering Sea (K--Q) is also valid for fishing in Norton Sound.

Fishing Vessel Registration/Catch Reporting (5AAC 34.950 (a))., (5AAC 39.130):

Vessels planning to fish in the Northern District must register for the district. District registration can be completed during the tank inspection.

During registration catch reporting schedules will be established and fishermen will be required to report daily the number of crab taken, number of pots pulled, area fished, and information on tagged crab recoveries. Codes will be provided so that reports can be kept confidential.

Reporting Requirements: 5AAC 34.035 (h)

If delivery of the catch is to be made in the registration area where the crab are taken then the catch report is due within 24 hours of delivery. If the catch is to be delivered outside the registration area then the fishermen is required to set up a

reporting time with a department representative from the Nome office prior to leaving the Section.

Tender/Processors (5AAC 34.940), (5AAC 34.950), (5AAC 34.070):

Prior to operating, Norton Sound processors must report to the Nome ADF&G office. When an operator intends to leave the management section, he must check out by making personal or radio contact with the Nome office, stating the number of king crab on board at the time of departure. He shall also indicate his unloading destination. Fish tickets will be turned into the Nome office no later than one week after the fishery closes.

Sex and Size Restrictions (5AAC 34.920 (d)), (5AAC 34.065):

A 4-3/4" minimum carapace width size limit will be in effect for red king crab, and only males can be harvested. Male blue king crab with a carapace width of 5-1/2" or greater may also be harvested.

Gear-Storage (5AAC 34.925 (g)):

Prior to and after the fishing season, gear must be stored in the specified gear storage area and may not be stored in waters less than 25 fathoms.

At the time of the season closure, pots must have all doors secured and fully open with all bait and bait containers removed. Within 72 hours following the closure, pots must either be removed from the water, stored in the storage area, or be moved to open waters (St. Lawrence Section, August 1-Sept. 3).

Closed Waters (5AAC 34.935 (a) (b)):

All waters of the Norton Sound Section enclosed by a line from 65° 23' N. latitude, 167° W. longitude to 64° 15' N. latitude, 167° W. longitude to 64° 15' N. latitude, 162° W. longitude to 63° 27' N. latitude, 162° W. longitude are closed to the taking of king crab from August 1 through September 3. (See Figure 3.)

Tanner Crab Closure (5AAC 35.510 (b)):

Tanner crab may not be taken or possessed in the Norton Sound section. This regulation was enacted in March 1982 to prevent circumvention of the king crab regulations and because there are no commercially sized tanner crab in Norton Sound.

Tagged Crab: Department personnel will be onboard processing vessels to sample commercial catches for biological information and to collect tagged crab. All tagged crab, whether legal or sublegal should be kept and returned to department personnel.

Receiving the exact recapture locations (loran reading or latitude/longitude) from commercial fishermen will greatly assist the department in developing a data base for Norton Sound crab. A three dollar reward will be paid for each tagged crab turned in with information on recapture area. Also there will be three tag numbers drawn from all reported tag recoveries, with the first tag drawn worth \$100 and the second and third worth \$75 and \$50 respectively. This drawing will take place 3 days after the fishery is closed.

Departure for St. Matthew (5AAC 34.070), (5AAC 34.940):

An additional tank inspection will be required prior to fishing in the St. Matthew Section. Inspection times and locations will be announced by news release prior to the opening date of September 1. Vessels may not have crab on board at the time of inspection. Vessels departing Norton Sound with crab on board must notify department personnel in Norton Sound of the number of crab on board at the time of departure. These crab must be off loaded prior to receiving an inspection for the General Section.

Table 1. Catch of red king crab in Norton Sound during research surveys and resulting population estimates, 1976-1988.

Year	Date	Research Agency	Vessel	Effort	Number of Red King Crab Captured 1/			Population Estimates 3/ of Legal Male crab	
					Sublegal Males	Legal 2/ Males	Females	Numbers	Pounds
1976	9/02 - 9/05 9/16 -10/07	NMFS	Miller-Freeman	Trawl 158 Tows	768	555	180	3,119,800	8,111,400
1979	7/26 - 8/05	NMFS	Miller-Freeman	Trawl 71 Tows	46	194	40	837,241	2,511,723
1980	7/04 - 7/14	ADF&G	Altair	Pots 397 Lifts	443	3,290	150	1,900,000	6,600,000 4/
1981	6/28 - 7/14	ADF&G	Altair	Pots 718 Lifts	4,097	3,415	1,933	1,285,195	4,755,221
1982	7/06 - 7/20	ADF&G	Aleutian #1	Pots 689 Lifts	5,019	2,001	424	353,273	1,271,783
1982	9/05 - 9/11	NMFS	Miller-Freeman	Trawl 50 Tows	322	107	265	970,646	2,620,744
1985	7/01 - 7/14	ADF&G	Arctic Sea	Pots 642 Lifts	6,086	4,645	181	907,579	2,414,644
1985	9/16 -10/01	NMFS	Argosy	Trawl 78 Tows	266	163	151	1,203,000	3,369,000
1988		NMFS		Trawl					

1/ Number of crab captured on ADF&G surveys represent data standardized for a 24 hour soak.

2/ Legal male red king crab were defined as at least 106 mm in carapace length for the 1976 NMFS survey; 105 mm for the 1979 and 1985 NMFS survey; and at least 121 mm in carapace width for all ADF&G surveys.

3/ Population estimates are valid for the date of the survey, ie either before or after the summer commercial fishery.

4/ The 1980 estimate has been revised from the original estimate of 13.4 million pounds. The original estimate was thought inaccurate due to under-reporting of recovered tagged crab.

Table 2. Commercial harvest of red king crab in Norton Sound, summer fishery, 1977-1988.

Year	Legal male pop. est. 1/	Commercial harvest 3/	Number of vessels	Crab/ pot	Avg. wt.	Exvessel price	Fishery value millions \$
2/4/ 1976	8.1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1977 5/	10.0	0.52	7	36	2.7	0.75	0.229
1978 5/	11.0	2.09	8	64	3.0	0.95	1.897
1979 4/	5.4	2.93	34	28	3.0	0.75	1.878
1980	6.6	1.19	9	29	3.6	0.75	0.890
1981	4.7	1.38	36	11	3.7	0.85	1.172
1982	1.3	0.23	11	6	3.6	2.00	0.405
1983	2.1	0.37	23	12	2.8	1.50	0.537
1984	2.7	0.39	8	14	2.8	1.02	0.395
1985	2.4	0.43	6	11	2.9	1.00	0.427
1986 6/	2.8	0.48	3	38	2.9	1.25	0.600
1987 7/	2.2	0.33	9	10	3.2	1.50	0.491
1988 7/	2.0	0.24	2	32	3.1	8/	8/

1/ Population estimate prior to fishery in given year in millions of pounds.

2/ No commercial fishery in 1976.

3/ Millions of pounds.

4/ Population estimate derived by National Marine Fisheries Service.

5/ Population estimate derived from catch per pot from commercial fishery.

6/ Population estimate derived from 1985 ADF&G assessment survey.

7/ Population estimate based on 1985 assessment survey data and recruitment observed inseason; this estimate can only be approximated due to the lack of current assessment data.

8/ Data unavailable

Table 3. Winter commercial and subsistence red king crab harvests, Norton Sound, 1978-1988.

Year 1/	Commercial		Subsistence						
	Fisher- men	# Crab Harvested	Winter 2/	Permits Issued	Permits Returned	Permits Fished	Total Crab Caught 3/	Total Crab Harvested 4/	Average Harvest/fm
1978	37	9,625	1977-78	290	206	149	6/	12,506	84
1979	1	221	1978-79	48	43	38	6/	224	6
1980	1	22	1979-80	22	14	9	6/	213	24
1981	0	0	1980-81	51	39	23	6/	360	16
1982	1	17	1981-82	101	76	54	6/	1,288	24
1983	5	549	1982-83	172	106	85	6/	10,432	123
1984	8	856	1983-84	222	183	143	15,923	11,220	78
1985	9	1,168	1984-85	203	166	132	10,757	8,377	63
1986	5	2,168	1985-86	136	133	107	10,751	7,052	66
1987	7	1,040	1986-87	138	134	98	7,406	5,772	59
1988	10	425	1987-88	71	58	40	3,573	2,724	68

1/ Prior to 1985 the winter commercial fishery occurred from January 1-April 30; as of March 1985, the winter commercial harvest may occur from November 15-May 15.

2/ The winter subsistence fishery occurs during months of two calendar years (as early as December through May).

3/ The number of crab actually caught; some may have been returned.

4/ The number of crab "harvested" is the number of crab caught and kept.

5/ Data unavailable.

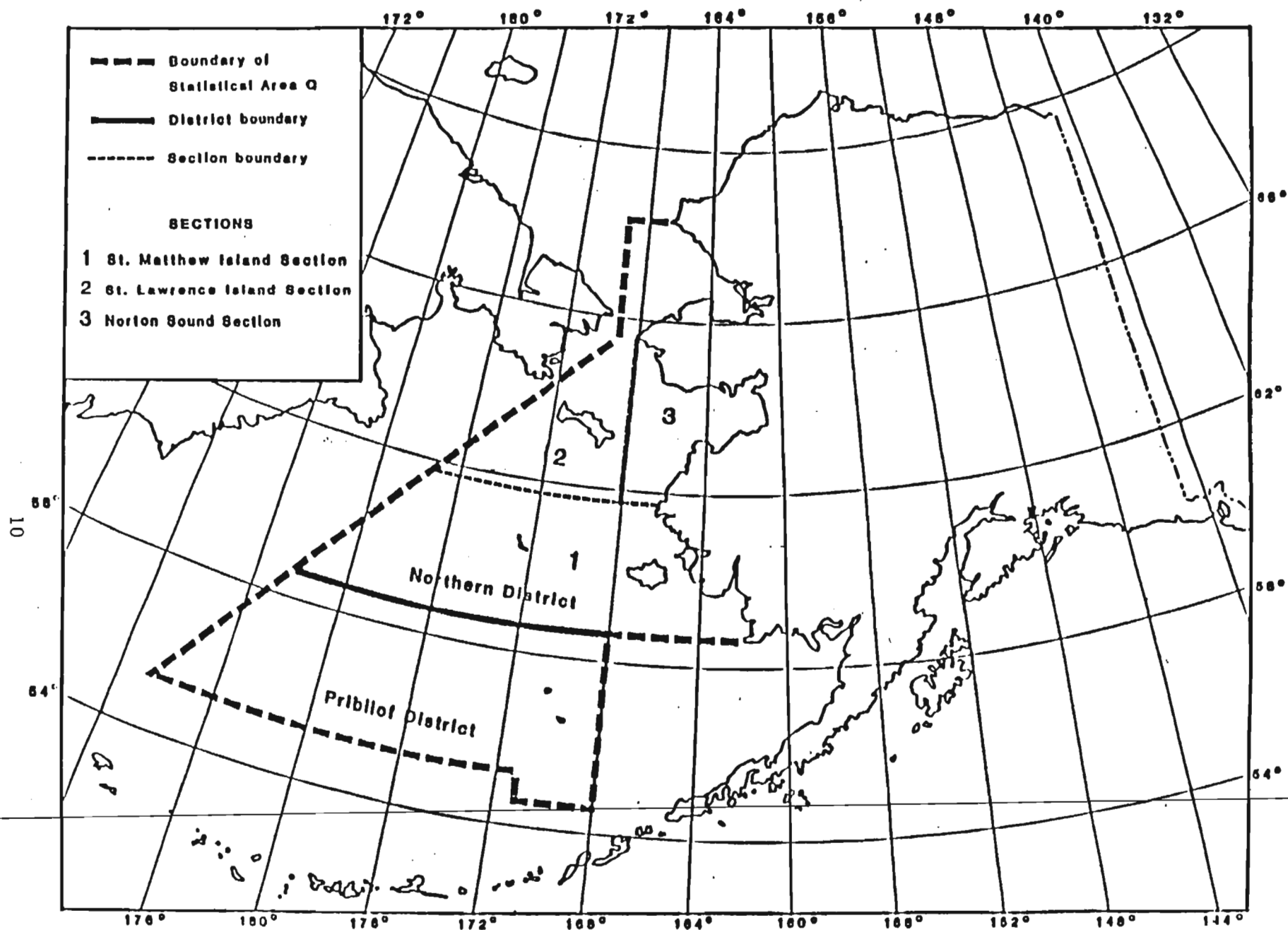


Figure 1. King crab fishing districts and sections of Statistical Area Q

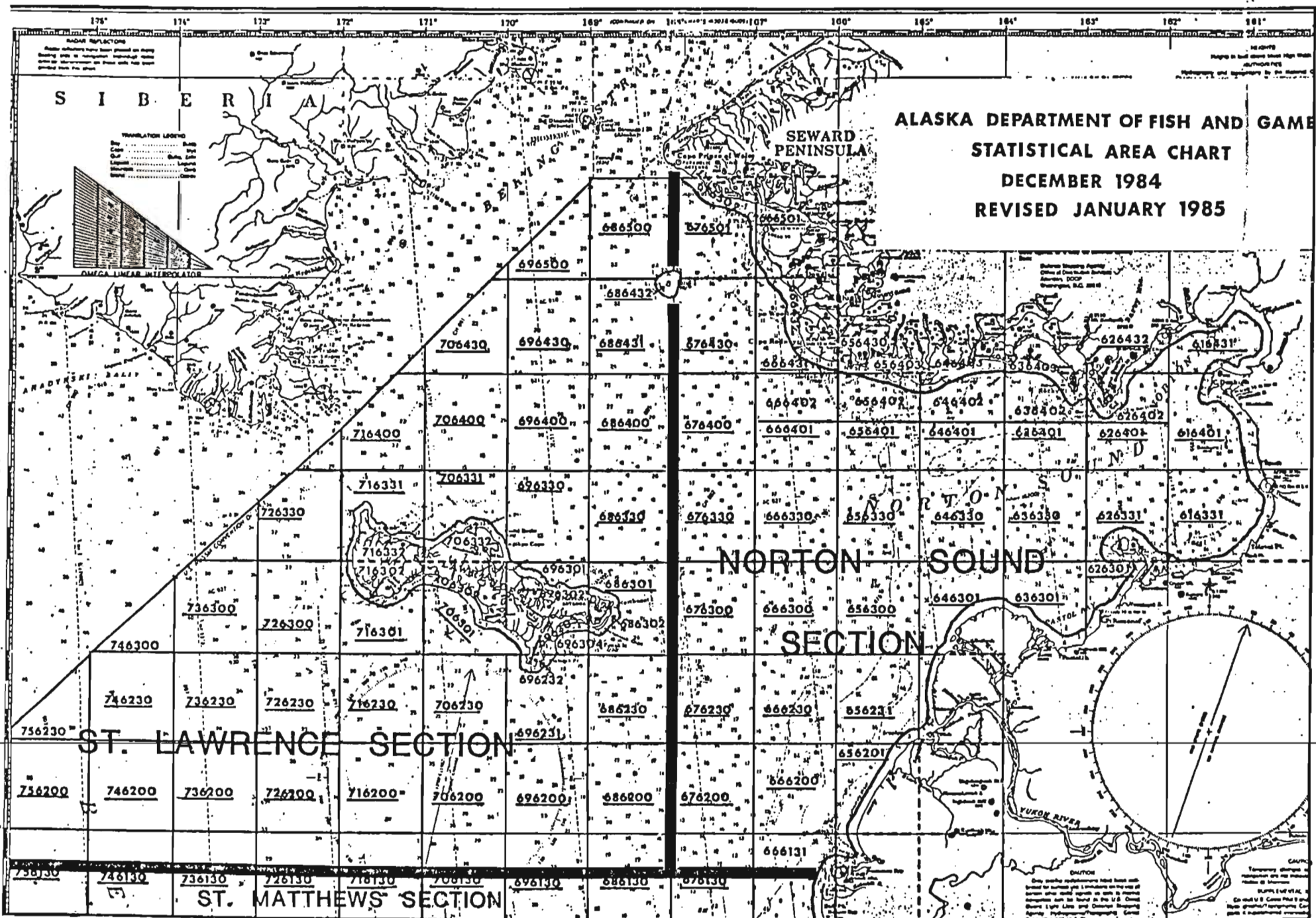


Figure 2. Statistical areas for the Northern District Red King Crab Fishery.

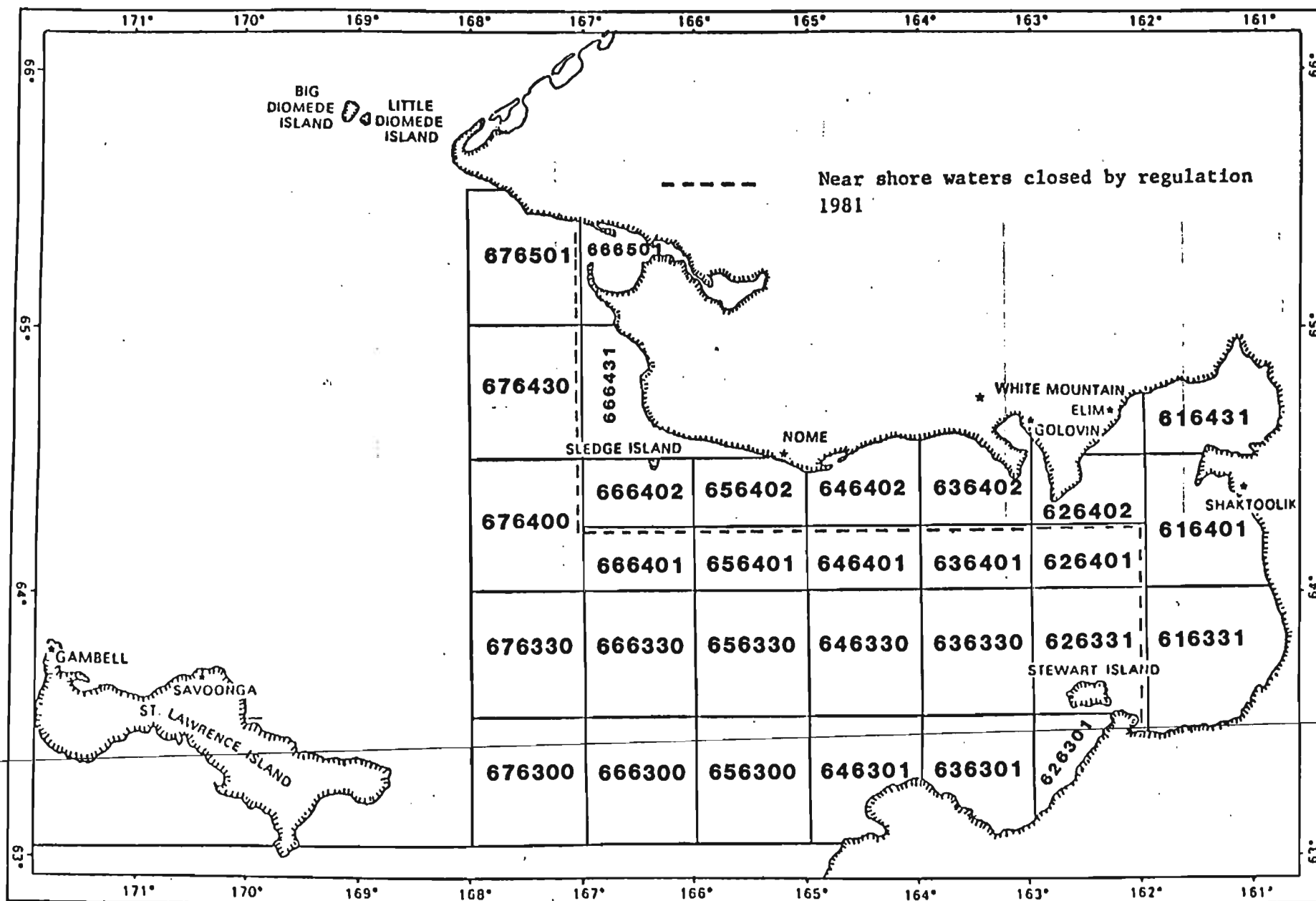


Figure 3. Statistical areas for the Norton Sound red king crab fishery.